

## Ear phone assembly for use with a hearing screener

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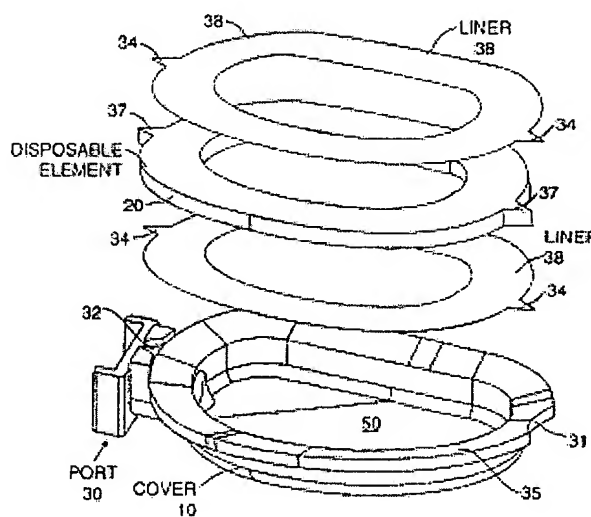
US5826582 (A1)

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Abstract not available for JP2002514116T

Abstract of corresponding document: **US5826582**

An ear phone assembly is provided for use with a hearing screening instrument to test infants for hearing impairments. The ear phone includes a generally D-shaped reusable cover including a back wall having a perimeter, a side wall extending from the perimeter to define a cavity for receiving an infant's ear, a port in the cover to receive and support a transducer, and a generally D-shaped disposable element that is adhesive coated on two sides to be secured to the cover and to the patient's head. The cover may have a notch located along the perimeter of the re-usable body for removing the disposable element. A liner is used to cover the disposable element adhesive sides to protect them from contamination during packaging and prior to use. The disposable element may have a die cut so that a portion of it can be removed to make the ear phone adjustable for infants with large ears. The ear phone is low in cost and capable of being used with any conventional hearing screening equipment.



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## Ear phone assembly for use with a hearing screener

Claims of corresponding document: **US5826582**

We claim:

1. An ear phone assembly for use with a transducer for hearing screening comprising:  
a reusable cover having a first end, a second end and a cavity;  
a disposable element having a first side and a first adhesive on the first side to secure releasably the disposable element first side to the reusable cover; and  
a port adapted to receive a transducer in communication with the cavity.
2. The assembly of claim 1 wherein the reusable cover is generally D-shaped.
3. The assembly of claim 2 wherein the reusable cover further comprises:  
a back wall having a first perimeter, the back wall further comprising a bent portion;  
a flange having a notch, a second perimeter, and a first surface, the first surface being adapted to receive the first side of the disposable element so that the disposable element overhangs the notch; and  
a side wall coupling the back wall first perimeter and the flange second perimeter, wherein the side wall and the back wall further comprise a cavity.
4. The assembly of claim 3 wherein the notch further comprises a finger-tip shape.
5. The assembly of claim 3 wherein the reusable cover comprises a rigid material having an acoustical impedance higher than air.
6. The assembly of claim 5 wherein the back wall material further comprises a visibly transparent material.
7. The assembly of claim 6 wherein the back wall material further comprises a polypropylene or a polycarbonate material.
8. The assembly of claim 7 wherein the back wall is in a plane and the flange first surface is generally oriented at a solid angle relative to the plane of the back wall.
9. The assembly of claim 3 wherein the cover further comprises a first shaped projection proximate the flange and the disposable element further comprises a second shaped projection adapted to engage said first shaped projection.
10. The assembly of claim 9 wherein the first shaped projection further comprises a V-shaped receptacle and the disposable element second shaped projection further comprises a V-shaped projection.
11. The assembly of claim 1 wherein the port further comprises:  
a mass of material in said cover; and  
a cylindrical aperture extending through said mass of material and opening at said side wall.
12. The assembly of claim 1 wherein said cover further comprises at least one projection proximate said aperture positioned to engage a transducer in a non-rotational relationship.
13. The assembly of claim 12 wherein the said at least one projection further comprises a U-shaped projection having a base and two upright legs, wherein the aperture is open to the base.
14. The assembly of claim 1 wherein the disposable element is generally D-shaped.
15. The assembly of claim 1 wherein the disposable element further comprises:  
a first end and a second end;  
a second side adapted to contact a patient's head; and  
a second adhesive on said second side.
16. The assembly of claim 15 wherein the second adhesive further comprises a double sided adhesive tape.

17. The assembly of claim 15 further comprising:  
a first liner and a second liner removably mounted to said first and second sides of the disposable element respectively, wherein each liner has at least one tab usable for removing each of said liner from each of said first and second sides.
18. The assembly of claim 17 wherein the at least one tab is V-shaped.
19. The assembly of claim 17 wherein each liner further comprises a generally D-shape.
20. The assembly of claim 19 wherein each liner further comprises a release paper.
21. The assembly of claim 15 wherein the first and second ends of said disposable element are symmetrical.
22. The assembly of claim 21 wherein the first and second sides of the disposable element are symmetrical and the disposable element is fully interchangeable between a patient's right ear and left ear.
23. The assembly of claim 15 wherein the first and second adhesives comprise the same adhesive.
24. The assembly of claim 15 wherein at least one of said first and second adhesives further comprises a hydrogel.
25. The assembly of claim 15 wherein the disposable element further comprises a resilient foam material.
26. The assembly of claim 25 wherein the resilient foam material further comprises an open-celled foam.
27. The assembly of claim 26 wherein the resilient foam material further comprises a PVC foam.
28. The assembly of claim 25 wherein the resilient foam material further comprises a closed-cell foam.
29. The assembly of claim 28 wherein the resilient foam material further comprises a polyethylene foam.
30. The assembly of claim 25 wherein the disposable element has at least a first annular sheet defining a first area and a second annular sheet defining a second area, said at least first and second annular sheets being co-planar and the second annular sheet circumscribing the first annular sheet, wherein the first annular sheet is removable separately from the second annular sheet.
31. The assembly of claim 25 wherein the disposable element further comprises a thickness between said first and second sides of approximately 1/4" thick.
32. A method for mounting an ear phone to a patient's head for hearing screening comprising:
  - (a) providing an ear phone including a re-usable cover having a first end and a second end and defining a cavity therein for receiving an ear and a port adapted to receive a transducer;
  - (b) providing a disposable element having a first side and a second side wherein each of the first and second sides have thereon an adhesive;
  - (c) securing the re-usable cover to said first side of the disposable element; and
  - (d) securing the second side of the disposable element to the patient's head, so that the cavity receives the ear sufficiently free of ambient noise.
33. The method of claim 32 wherein step (b) further comprises providing a first liner and a second liner respectively mounted on said first side and second side of the disposable element, and removing said first liner from said first side prior to step (c), and in wherein step (c) further comprises removing said second liner from said second side.
34. The method of claim 32 wherein the port further comprises an aperture and the method further comprises frictionally inserting the transducer in the aperture.
35. The method of claim 32 wherein providing the cover further comprises providing a notch in said cover so that step (c) further comprises placing said disposable element over said notch and step (d) further comprises removing the disposable element from the patient's head.
36. The method of claim 35 wherein step (d) further comprises grasping the disposable element over said

notch and peeling the disposable element from the cover.

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